

# Optimization Methods – Metodi di Ottimizzazione

Link to the moodle e-learning site: [Optimization Methods 2018/2019](#)

Teaching Language: Italian (with english slides)

Brief Contents (Dipl.Sup.)

Optimality Conditions

Local unconstrained optimization

Local Constrained Optimization

Optimization methods for Machine Learning

Global optimization

Teaching material:

Metodi di ottimizzazione non vincolata, L. Grippo, M. Sciandrone, Springer-Verlag, 2011

Additional Lecture Notes will be distributed

Prerequisites:

Elementary knowledge of calculus (Taylor expansions, gradients, Hessian matrix)

Linear algebra

A course on operations Research / linear programming might prove useful

Teaching style: Front lectures

Exams: Written or oral (in alternative) exam on all the course subjects

Syllabus:

Introduction;

Optimization models and examples

Basic definitions

Optimality conditions for constrained optimization (KKT conditions)

Application: Support Vector Machines

Convergence of algorithms

One-dimensional optimization

Gradient descent methods

Newton methods

Conjugate direction methods

Quasi-Newton methods

Trust Region methods

Constrained optimization methods

Global optimization